EARTH'S NATURAL RESOURCES

As a result of studying the Earth's natural resources:

Students understand that the Earth has various natural resources important to all living organisms.

- ***Describe how essential natural resources (i.e., air, water, soil and minerals) vary in their abundance, and explain the importance of conservation and recycling of natural resources. (EIIA1)***

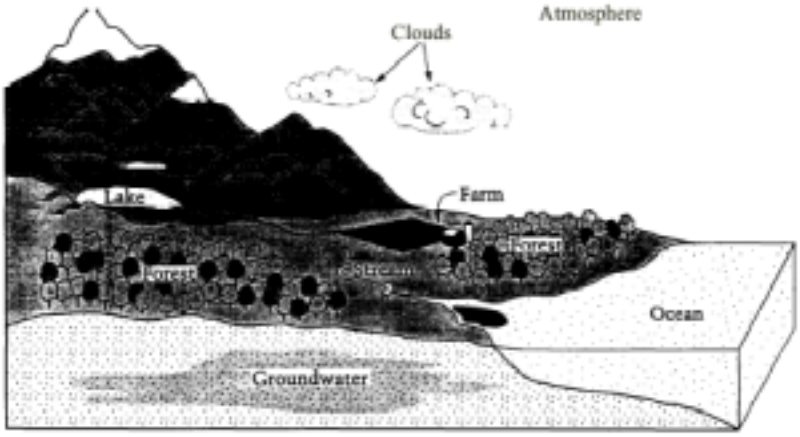
Explain how waste that is deposited in a landfill can contaminate nearby water sources. (MO)

Which of the following is a renewable resource?
a. wood
b. aluminum
c. oil
d. quartz

In general, less energy is needed to produce a product from recylced material than from new material. This is one reason why we should recycle. Another reason to recycle is because

a. recycling reduces the amount of resources available for our use.
b. recycling reduces the amount of waste that is burned or buried in landfills.
c. our natural resources occur in unlimited amounts.
d. increasing the amount of fossil fuel burned decreases environmental pollution.

Describe sources of fresh water and the importance of water to life. (EIIA2)



The diagram above shows a region near the coast of a large continent. A range of high, snowcapped mountains lies near the ocean. There is a farm between the mountains and a forest.

The following questions ask you to think about water and the water cycle in the system shown in the diagram. In the system, water exists as a gas, a liquid, and a solid.

Referring specifically to the system shown in the diagram above, explain why fresh water is a natural resource that is renewable.

Students understand the use of the Earth's natural resources by humans.

- ***Describe renewable and nonrenewable sources of energy and the advantages and disadvantages of their use. (EIIB1)***

Which of the following energy sources is the best example of a nonrenewable resource?

a. coal
b. wind
c. water
d. sunlight

All of the following are considerations when planning a nuclear power facility EXCEPT

a. emission of chemicals that produce acid rain.
b. disposal of radioactive waste.
c. thermal pollution of surrounding waterways.
d. location of earthquake fault zone.

The country of Iceland uses geothermal energy as a primary source of heat. Hot water is pumped from the ground and used to heat most of Iceland's homes and businesses. What is the source of the energy that produces the hot water?

a. magma within Earth's crust
b. the insulating effect of snow and ice
c. warm water from the Gulf Stream
d. friction caused by continental drift

- ***Use maps to identify geological features and determine locations, scales and directions. (EIIB2)***

(no examples provided)

METEOROLOGY

As a result of studying the Earth's weather and climate patterns:

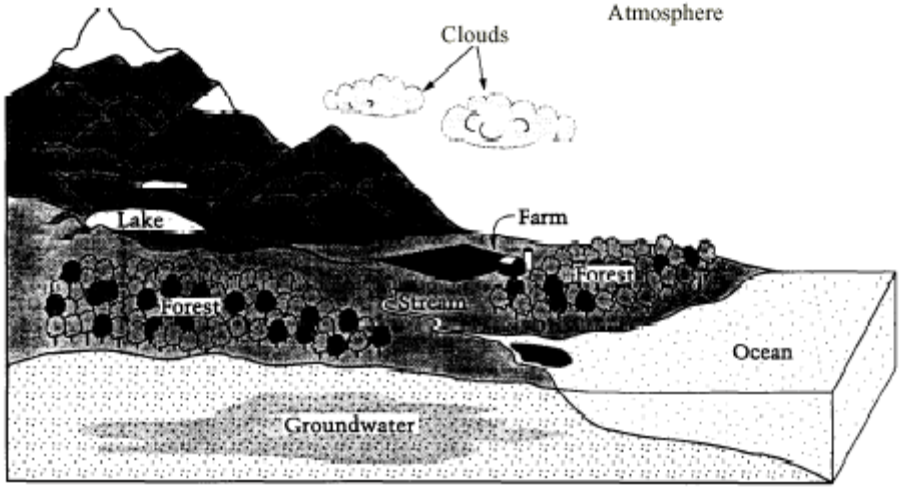
Students understand that our atmosphere is dynamic and has patterns of weather systems.

- ***Explain how winds originate and are affected by the unequal heating of the Earth's surface, the rotation of the Earth, and the distribution of land and water surfaces. (EIIIA1)***

The **MAIN** source of energy for wind currents on Earth is

a. lightning.
b. heat from the sun.
c. the moon's gravity.
d. heat from Earth's interior.

- ***Explain the water cycle and the energy that drives it. (EIIIA2)***



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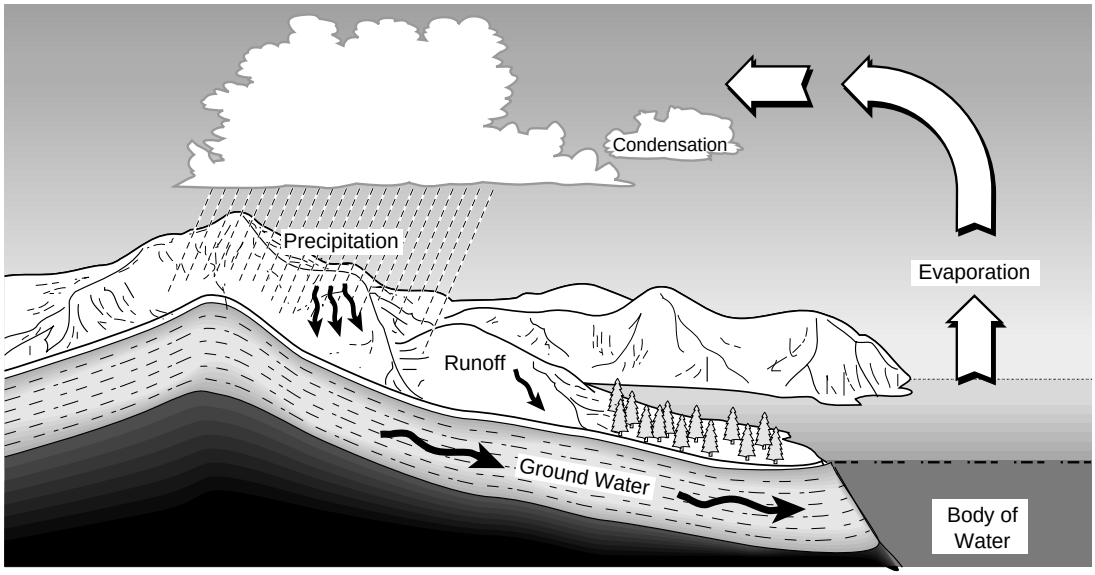
Describe how water in the lake can become snow on the mountains in the system shown in the diagram.

The water cycle is the continuous movement of water between the Earth's surface and its atmosphere. An illustration of the water cycle is shown below.



The following processes play important roles in the water cycle:

- **evaporation** - the changing of a liquid to a gas;
- **condensation** - the changing of a gas to a liquid; and
- **precipitation** - the process of depositing water in liquid or solid form.

What type of energy drives the water cycle?

a. wind
b. mechanical
c. solar
d. chemical

Airline pilots flying high in the sky sometimes report snow falling outside their aircraft, while down on the ground there is no precipitation falling. Which of the following **best** explains what is happening?

a. The snow condenses to a liquid before it hits the ground.
b. Evaporating water in the air forces the snow back up into the clouds.
c. The snow melts and evaporates before it hits the ground.
d. Water condenses on the snow, forming new clouds.

In which part of the water cycle are dissolved solid impurities separated from the water?

a. Cloud formation in the atmosphere
b. Precipitation from the clouds
c. Evaporation from the ocean
d. Water flow from the lake to the ocean

What is the main cause of water evaporation from the ocean?

a. Wind and wave action along the shore
b. Currents in the ocean
c. Heat energy from the ocean floor
d. Heat energy from the Sun

Explain how clouds can form as air rises. You may draw a diagram as part of your explanation.

- ***Explain how meteorologists collect and interpret meteorological data from various sources. (EIIIA3)***

The next two questions refer to the following chart.

	Monday	Tuesday	Wednesday	Thursday	Friday
High Temperature (°F)	43	50	42	53	60
Low Temperature (°F)	28	38	28	39	45
Precipitation (inches)	0.0	1.0	1.5	0.0	1.6
Average Wind Speed (mph)	15	10	7	10	10

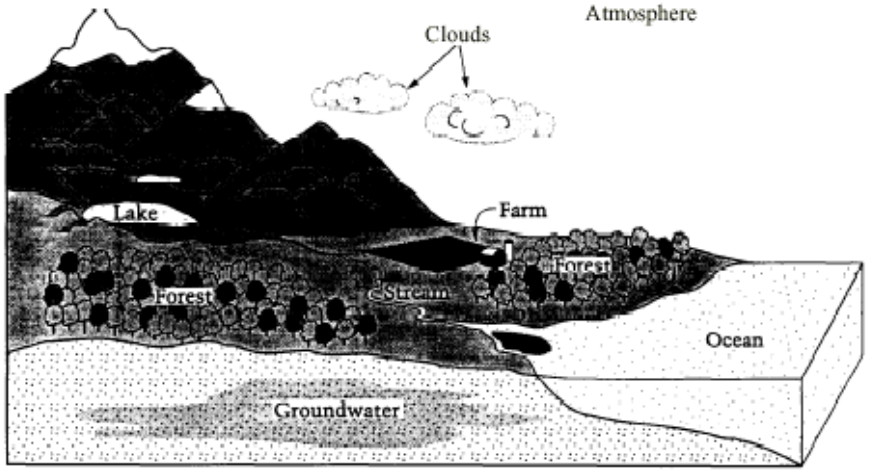
Based on the weather data in the table, on which day was snowfall most likely to have occurred?

a. Monday
b. Tuesday
c. Wednesday
d. Thursday

On which day was the average windchill temperature likely to be the lowest?
a. Monday
b. Tuesday
c. Wednesday
d. Friday

Students understand the reasons for the distribution of climates around the world.

- ***Explain how regional climates are determined by energy transfer from the sun and are influenced by cloud cover, the Earth's rotation, oceans and mountains. (EIIIB1)***



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In the system shown in the diagram on page 86, the prevailing winds blow from the ocean toward the mountains in September. In June, however, the winds blow mostly from the mountains toward the ocean. In which month, June or September, would the farm get more precipitation? Explain your answer.

Further inland, on the continent, just beyond the mountain range shown in the diagram on page 86, there is a desert that receives very little precipitation. Give an explanation of why this desert receives such a small amount of precipitation.

- ***Explain the possible causes and effects of global phenomena, including El Niño, global warming and ozone depletion. (EIIIB2)***

As a consequence of global warming, coastal areas could:

a. be flooded as ocean levels rise;
b. become further inland as ocean levels recede;
c. get cooler due to more water in the water cycle; or
d. sink as the land becomes less stable from changes in the ocean water;

One major contributor to global warming is an increased amount of carbon dioxide in the atmosphere. If the number of living plants significantly increased,

a. global warming might get worse because of the increase in carbon dioxide caused by plants;
b. global warming might be reduced because of the decrease in carbon dioxide caused by photosynthesis;
c. global warming might get worse because of the increase in oxygen caused by plants; or
d. there might not be a noticeable impact on global carbon dioxide levels.

As a result of studying the composition of the Earth and the changes it undergoes:

Students understand interactions among the Earth's lithosphere, hydrosphere, atmosphere and biosphere.

- ***Describe how plate tectonics is related the interior composition of the Earth, including its core, mantle and crust, and relate it to major geological events including earthquakes, volcanic eruptions and mountain building. (EIVA1)***

Which **best** describes the changes occurring to the Earth's surface over time?

a. New mountains are being formed as old mountains are gradually worn down.
b. Mountains are gradually being worn down, but no new ones are formed.
c. More mountains are gradually formed as the oceans recede.
d. New mountains are only formed under the oceans.

Why is an earthquake more likely to occur in California than in Connecticut? Explain your answer fully.

If the locations of earthquakes over the past 10 years were plotted on a world map, which of the following would be observed?

a. Earthquakes occur with the same frequency everywhere on Earth.
b. Earthquakes generally occur along the edges of tectonic plates.
c. Earthquakes most frequently occur near the middle of continents.
d. Earthquakes do not seem to occur in any consistent pattern.

The Pacific Ring of Fire is a belt-shaped region that roughly coincides with the seacoasts bordering the Pacific Ocean. Explain why volcanic activity and earthquakes occur frequently in this region.

- ***Explain how the formation, weathering, sedimentation and reformation of rock constitute a continuing rock cycle. (EIVA2)***

Igneous rock and sedimentary rock can be transformed into metamorphic rock by similar processes. Explain these processes.

- **Describe how waves, wind, water and ice shape the Earth's land surface. (EIVA3**)

Which of the following features **best** indicates that a valley was changed by a glacier?

a. its width
b. its length
c. its height

d. its shape

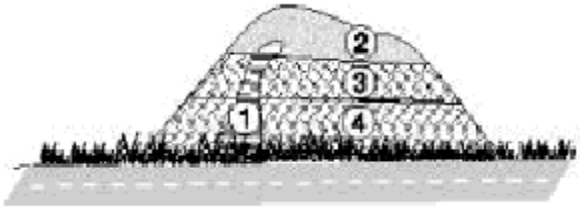
It is harder to read the wording on very old tombstones than it is to read the wording on newer ones. This difference is **most likely** a result of:

a. dirt filling in the letters;
b. modern tombstones being made of artificial materials;
c. weathering of the stone; or
d. slow crystallization of the stone.

- ***Describe how geological history and major time periods can be determined using evidence from fossils and rock sequences. (EIVA4)***

Of the following statements, which best supports the continental drift theory?

a. All oceans are salty.
b. Igneous rocks are found on all continents.
c. Fossils of the same species of extinct land plants have been found in both South America and Africa.
d. Early humans migrated to North America over a land bridge from eastern Asia.



The diagram above shows a cross section of rocks beside a highway. Which rock type is the oldest?

a. rock type 1
b. rock type 2
c. rock type 3
c. rock type 4